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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/429,530 10/28/99 FUKUMOTO

Y 35.C12395CIP

EXAMINER

005514 IM31/0228
FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK NY 10112

~~Perez Ramos, V~~

ART UNIT

PAPER NUMBER

1765
DATE MAILED:

02/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/429,530	Applicant(s) FUKUMOTO, YOSHIHIKO	
	Examiner Vanessa Perez-Ramos	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 20) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cady (U.S. 4,544,446) in view of Applicant's Admission of the Prior Art.

In regard to claims 11-12, 15, 17-24, 28- 29, 31-34, 37 and 39-44, Cady discloses a method for fabricating a semiconductor device (col. 1, lines 49-50) wherein a metal surface is polished (col. 2, lines 2-3); and the polished surface is cleaned by one of a variety of methods, including brush scrubbing (col. 1, line 53) and ultrasonic washing (col. 1, lines 53-54).

Cady does not disclose that the metal polished is formed in a wiring or contact pattern, which is in turn part of an insulating film formed on a substrate. Furthermore, Cady does not disclose the utilization of a combination of the above-described cleaning methods.

Applicant discloses as part of his Description of the Prior Art that a typical semiconductor manufacturing process comprises: forming , on a substrate, an insulating film with wiring contact thereon (p.2, lines 14-26), followed by CMP of the metal to polish and flatten the wiring material (p. 4, lines 1-18).

It would have been obvious to one skilled in the art at the time of the invention to modify Cady by polishing a metal that was formed in a wiring or contact pattern, which is in turn part of an insulating film formed on a substrate, because this is all part of a widely used and well known process for semiconductor manufacturing, as evidenced by Cady. Furthermore, even though Cady does not disclose a cleaning step that involves a combination of both jet scrubbing and

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ultrasonic scrubbing, it is the Examiner's position that this would have been obvious to one skilled in the art at the time of the invention, with the anticipation of achieving a clean surface. Since both cleaning methods claimed by Applicant have been utilized in the past for the same purpose (removing contaminants after polishing), it is just obvious that a combination of two or more of these well known methods would at least achieve the same cleaning degree of one method alone, and most possibly, would provide a cleaner surface than that obtained by one cleaning step/method alone.

In regard to claims 13-14, 16, 35-36 and 38, the variation of process parameters such as the frequency and rpm would have been obvious to one skilled in the art with the purpose of determining the best process conditions.

In regard to claims 25-26, all of the metals and alloys described by Applicant are well known and widely used in the art of semiconductor manufacturing, and their use would have been obvious to one skilled in the art.

In regard to claim 27, the use of barrier metal layers is well known in the art of semiconductor manufacturing, and its use would have been obvious to one skilled in the art.

In regard to claim 30, the use of polishing slurries containing abrasives is well known in the art of semiconductor manufacturing, and its use would have been obvious to one skilled in the art.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Perez-Ramos whose telephone number is 703-306-5510. The examiner can normally be reached on Mon-Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the


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organization where this application or proceeding is assigned are 703-305-7718 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.

Vanessa Perez-Ramos
Examiner
Art Unit 1765

VPR
February 26, 2001



BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700